



New England Bioassay

A Division of GZA



CHRONIC AQUATIC TOXICITY TEST REPORT

**Barnhardt Manufacturing Company
Colrain, MA**

Ceriodaphnia dubia Survival and Reproduction Test – EPA 1002.0

EPA 821-R-02-013, “Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms”, Fourth Edition

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION
MANAGEMENT

Test Start Date: 10/12/16

Test Period: October 2016

Report Prepared by:

New England Bioassay
A division of GZA GeoEnvironmental
77 Batson Drive
Manchester CT, 06042

NEB Project Number: 05.0044654.00

Report Date: November 9, 2016

Report Submitted to:

Barnhardt Manufacturing Company
247 Main Road
Colrain, MA 01340

Sample ID: Effluent

Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com if you have any questions concerning these results.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Barnhardt Manufacturing Company Test Start Date: 10/12/16
 NPDES Permit Number: MA0003697 Outfall Number: 001

<u>Test Type</u>	<u>Test Species</u>	<u>Sample Type</u>	<u>Sample Method</u>
<input type="checkbox"/> Acute	<input type="checkbox"/> Fathead Minnow	<input type="checkbox"/> Prechlorinated	<input type="checkbox"/> Grab
<input checked="" type="checkbox"/> Chronic	<input checked="" type="checkbox"/> Ceriodaphnia Dubia	<input type="checkbox"/> Dechlorinated	<input checked="" type="checkbox"/> Composite
<input type="checkbox"/> Modified	<input type="checkbox"/> Daphnia Pulex	<input type="checkbox"/> Unchlorinated	<input type="checkbox"/> Flow-thru
<input type="checkbox"/> (Chronic reporting LC50 values)	<input type="checkbox"/> Mysid Shrimp	<input type="checkbox"/> Chlorinated	<input type="checkbox"/> Other
<input type="checkbox"/> 24-Hour Screening	<input type="checkbox"/> Sheepshead	TRC conc. <u>0.010 mg/L</u>	
	<input type="checkbox"/> Menidia		
	<input type="checkbox"/> Sea Urchin		
	<input type="checkbox"/> Selenastrum		
	<input type="checkbox"/> Other _____		

Dilution Water

Receiving water collected at a point immediately upstream of or away from the discharge;
 (Receiving water name and sampling location: North River -see COC)
 Alternate Surface Water of known quality and a hardness to generally reflect the characteristics
 of the receiving water; (Surface water name: _____)
 Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and
 reagent grade chemicals; or deionized water combined with mineral water;
 Artificial sea salts mixed with deionized water;
 Other _____

Effluent Sampling Date (s): 10/11-12/16 10/13-14/16 10/16-17/16

Effluent Concentrations Tested (in%): 0% 6.25% 5.0% 12.5% 25% 50% 100%
 * (Permit Limit Concentration): 5.0% (C-NOEC)

Was effluent salinity adjusted? No If yes, to what value? N/A ppt

Reference Toxicant test date: 10/24/16 Reference Toxicant Test Acceptable: Yes No

Age and Age Range of Test Organisms < 24 hours Source of Organisms NEB Lab

TEST RESULTS & PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control

Mean Control Survival: 100% Mean Control Reproduction: 31.2 young/female

B. Receiving Water Control

Mean Control Survival: 90% Mean Control Reproduction: 29.5 young/female

C. Lab Culture Control Yes No

Mean Control Survival: N/A Mean Control Reproduction: N/A

D. Thiosulfate Control Yes No

Mean Control Survival: N/A Mean Control Reproduction: N/A

Test Variability

Test PMSD (growth) N/A Upper and Lower PMSD bound N/A low in-bounds high
 Test PMSD (reprod.) 24.5% Upper and Lower PMSD bound 13-47% low in-bounds high

Permit Limits & Test Results

	<u>Limits</u>		<u>Results</u>
LC50	<u>100%</u>	LC50	<u>>100%</u>
		Upper Value	<u>±∞</u>
		Lower Value	<u>100%</u>
		Data Analysis	
		Method Used	<u>Graphical</u>
A-NOEC	<u>N/A</u>	A-NOEC	<u>100%</u>
C-NOEC	<u>5.0%</u>	C-NOEC	<u>6.25%</u>
		LOEC	<u>12.5%</u>
IC25	<u>N/A</u>	IC25	<u>15.9%</u>
IC50	<u>N/A</u>	IC50	<u>22.7%</u>

PMSD Comparison Discussion (Test Variability/Sensitivity)

Reproduction

- 1. PMSD exceeds upper bounds. Test results are highly variable and may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC).
- 1a. Test results indicate the discharge is not toxic at the PLC. Test is not sufficiently sensitive and must be repeated within 30 days of the initial test completion date using fresh samples.
- 1b. Test results indicate the discharge is toxic at the PLC. Test results are considered acceptable and the test does not have to be repeated.
- 2. The PMSD falls within the upper (47%) and lower (13%) bounds. Results are reportable.
- 3. PMSD falls below the lower bound test variability criterion. The test is very sensitive. The relative percent difference (RPD) between the control and each treatment was calculated and compared to the lower PMSD boundary
- 3a. The RPD values for each concentration fall below the lower bound. The differences observed in this test are considered statistically insignificant.
- 3b. The RPDs for the following concentrations are above the lower bound _____.
The results at these concentrations are considered statistically significantly lower than controls.

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

Survival Reprod.

- | | | |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1. Ideal concentration-response relationship |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. All or nothing response |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Stimulation at low concentrations but no significant effect at higher concentrations |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Interrupted concentration-response: significant effects bracketed by non-significant effects |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Interrupted concentration-response: non-significant effects bracketed by significant effects |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Significant effects only at highest concentration |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Significant effects at all test concentrations but flat concentration-response curve |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Significant effects at all test concentrations with a sloped concentration-response curve |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Inverse concentration-response relationship |

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

Survival Reprod.

- | | | |
|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 1. Results are reliable and reportable. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Results are anomalous. An explanation is provided in the body of the report. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Results are inconclusive. A retest with fresh samples is required. An explanation is provided in the body of the report. |

Whole Effluent Toxicity Testing Report Conclusions and Notes

Client Name/Project: Barnhardt Manufacturing Company Test Date: 10/12/16

Sample ID: _____ Effluent _____

Your results were as follows:

- Passed all whole effluent toxicity permit limits
- Failed the following permit limit(s): LC50 C-NOEC
Please proceed according to the instructions in your permit.
- Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**
- A retest using fresh samples must be performed within 30 days of the initial test completion date (____) due to the test condition described below. See next page for further explanation.
- Test Invalid due to: Diluent toxicity Synthetic control toxicity
- Test not sufficiently sensitive. PMSD exceeds upper bound.
- Results are inconclusive due to an unusual concentration-response relationship.
- Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the GZA Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.
- Additional testing for metals was required on the second and third effluent samples due to the following:
- Renewal sample(s) were of sufficient potency to cause lethality to 50% or more of the test organisms as follows: Effluent #: 2 3 Concentration: 6.25% 12.5% 25% 50% 100% ____%
- The test failed to meet its permit limit for: LC50 C-NOEC

Diluent Toxicity:

- Testing will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.
- Retesting will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.
- This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

Sampling Requirements:

A minimum of 3 samples were collected. Yes. No. See explanation on next page.

Samples were first used within 36 hours of collection. Yes. No. See explanation on next page.

Dechlorination Procedures: Chlorine was measured using 4500 CL-G DPD Colorimetric Method.

Dechlorination was not required.

Sample was dechlorinated to _____ mg/L by adding sodium thiosulfate to the sample prior to test initiation. A dechlorinated control of diluent water spiked with sodium thiosulfate equal in proportion to the amount added to the effluent sample was included in the test series.

Chlorine elevated due to interference. Chlorine was _____ mg/L after interference check.

Total Residual Chlorine was re-measured following aeration, and was found to be _____ mg/L.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____
[Date]

[Authorized Signature]

[Print or Type Name and Title]

[Print or Type the Permittee's Name]

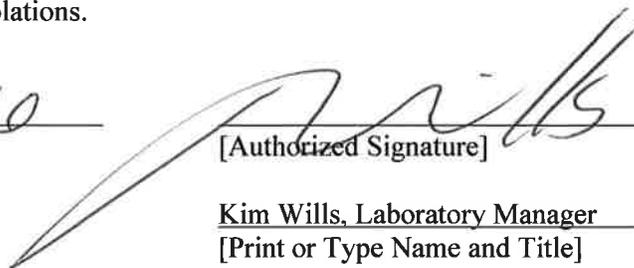
[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay, a division of GZA GeoEnvironmental, Inc. Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on 11/9/10
[Date]



[Authorized Signature]
Kim Wills, Laboratory Manager
[Print or Type Name and Title]

New England Bioassay
[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts

If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY TOXICITY DATA FORM
CHRONIC COVER SHEET

CLIENT: Barnhardt
 ADDRESS: 247 Main Road
Colrain, MA 01340
 SAMPLE TYPE: Barnhardt Industrial Effluent
 DILUTION WATER: North River

C.dubia TEST ID # 16-1495
 COC # C36-3565/66
 PROJECT # 05.0044654.00

INVERTEBRATES

TEST SET UP (TECH INIT) CB
 TEST SPECIES *Ceriodaphnia dubia*
 NEB LOT# Cd16 (RMH 228)
 AGE < 24 hours
 TEST SOLUTION VOLUME (mls) 15
 NO. ORGANISMS PER TEST CHAMBER 1
 NO. ORGANISMS PER CONCENTRATION 10

Laboratory Control Water (CTRMH)

Batch Number	Hardness mg/L CaCO ₃	Alkalinity mg/L CaCO ₃
CTR16 (MH010)	88	60

	DATE	TIME
TEST START:	10/12/16	1227
TEST END:	10/18/16	1241

Results of *Ceriodaphnia dubia* Chronic Test

95% Confidence
Limits

48 Hour LC50	>100%	100%±∞
7 Day LC50	>100%	100%±∞
Survival NOEC	100%	
Survival LOEC	>100%	
Reproduction NOEC	6.25%	
Reproduction LOEC	12.5%	
Reproduction IC ₂₅	15.9%	

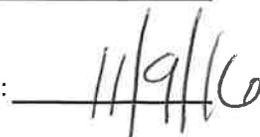
NOEC: NO OBSERVABLE EFFECT CONCENTRATIC LOEC: LOWEST OBSERVABLE EFFECT CONCENTRATION

Comments:

REVIEWD BY:



DATE:



NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS: Barnhardt, 247 Main Road, Colrain, MA 01340				
NEB PROJECT NUMBER: 05.0044654.00		NEB TEST NUMBER: 16-1495		COC # C36-3565/66
TEST ORGANISM: <i>Ceriodaphnia dubia</i>		AGE: <24 hours		Lot # Cd16 (RMH 228)
START DATE: 10/12/16	TIME: 1227	END DATE: 10/18/16	TIME: 1241	

Effluent Concentration	Culture Lot# Cd16 (RMH 228)											Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts	
	Cup #	A1	A2	A3	A4	A6	A7	A8	A9	A11	A13					
	Day Number	Replicate														
	A	B	C	D	E	F	G	H	I	J						
NEB Lab Synthetic Control	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	CB		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10	PD		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10	CW		
	3	6	3	5	5	6	4	✓	5	✓	5	39	10	CW	CW	
	4	✓	✓	9	✓	✓	✓	✓	✓	✓	10	19	10	CW	CW	
	5	13	11	✓	11	10	10	11	10	9	✓	85	10	PD	PD	
	6	20	14	15	18	15	18	17	20	15	17	169	10	CB	CB	
	7															
		totals	39	28	29	34	31	32	28	35	24	32	312	10		MG
North River Diluent		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓/X	✓		9			
	2	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	0	9			
	3	4	4	5	5	6	5	6	5	X	6	46	9			
	4	9	10	✓	✓	✓	✓	✓	✓	X	10	29	9			
	5	✓	✓	11	13	10	11	11	11	X	✓	67	9			
	6	19	18	15	18	16	18	16	17	X	16	153	9			
	7															
		totals	32	32	31	36	32	34	33	33	0	32	295	9		
5.0%		A	B	C	D	E	F	G	H	I	J					
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10			
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10			
	3	7	6	5	6	6	5	5	4	5	4	53	10			
	4	✓	✓	12	✓	✓	✓	✓	✓	✓	13	25	10			
	5	13	13	✓	12	10	10	9	9	11	✓	87	10			
	6	19	19	17	17	16	14	18	18	13	18	169	10			
	7															
		totals	39	38	34	35	32	29	32	31	29	35	334	10		

Notes: _____

NEW ENGLAND BIOASSAY - CHRONIC TOXICITY TEST BROOD DATA SHEET

FACILITY NAME & ADDRESS:		Barnhardt, 247 Main Road, Colrain, MA 01340										
NEB PROJECT NUMBER:	05.0044654.00	ORGANISM:	<i>Ceriodaphnia dubia</i>				START DATE:	10/12/16				

Effluent Concentration	Day Number	Replicate										Total Live Young	# Live Adults	Analyst-Transfer	Analyst-Counts
		A	B	C	D	E	F	G	H	I	J				
		6.25%	0	✓	✓	✓	✓	✓	✓	✓	✓				
1	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
2	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
3	6		✓	4	6	✓	6	7	✓	6	5	40	10		
4	10		12	10	✓	✓	✓	✓	✓	✓	19	51	10		
5	✓		✓	✓	12	3	11	10	6	11	✓	53	10		
6	13		17	17	13	10	18	17	14	14	16	149	10		
7															
	totals		29	29	31	31	13	35	34	20	31	40	293	10	
12.5%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	4	6	5	7	5	5	4	5	6	5	52	10		
	4	8	10	8	✓	✓	✓	✓	10	✓	9	45	10		
	5	✓	✓	✓	10	10	10	10	✓	10	✓	50	10		
	6	14	13	13	18	1	16	13	13	15	12	128	10		
	7														
	totals	26	29	26	35	16	31	27	28	31	26	275	10		
25%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	3	2	3	4	1	✓	5	3	1	1	23	10		
	4	2	10	✓	✓	✓	✓	✓	8	✓	3	23	10		
	5	✓	✓	✓	8	1	6	1	✓	8	✓	24	10		
	6	14	16	7	6	1	✓	✓	1	1	14	60	10		
	7														
	totals	19	28	10	18	3	6	6	12	10	18	130	10		
50%		A	B	C	D	E	F	G	H	I	J				
	0	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		10		
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	0	10		
	7														
	totals	0	0	0	0	0	0	0	0	0	0	0	10		

CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 1 of 6)
Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 16-2024-3088	Endpoint: 2d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 26 Oct-16 13:32	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 15-9712-1244	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 12 Oct-16 12:27	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 18 Oct-16 12:41	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age: <24h
Sample ID: 16-2112-9423	Code: 60A078CF	Client: Barnhardt
Sample Date: 12 Oct-16 06:30	Material: Industrial Effluent	Project:
Receipt Date: 12 Oct-16 10:30	Source: Barnhardt (BBA Fiberweb)	
Sample Age: 6h	Station:	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	381259	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

2d Survival Rate Summary

Calculated Variate(A/B)

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	10	0.9000	0.0000	1.0000	0.1000	0.3162	35.14%	0.0%	9	10
5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
6.25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
12.5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
50		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
100		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10

2d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

2d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 2 of 6)

Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 16-2024-3088

Endpoint: 2d Survival Rate

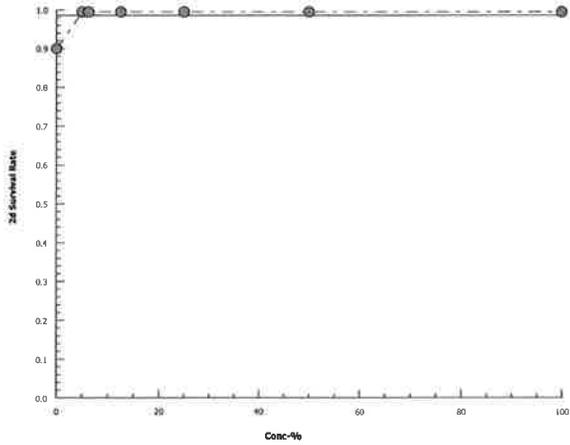
CETIS Version: CETISv1.9.2

Analyzed: 26 Oct-16 13:32

Analysis: Linear Interpolation (ICPIN)

Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 3 of 6)
Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 19-5986-6946	Endpoint: 6d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 26 Oct-16 13:32	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 15-9712-1244	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 12 Oct-16 12:27	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 18 Oct-16 12:41	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age: <24h
Sample ID: 16-2112-9423	Code: 60A078CF	Client: Barnhardt
Sample Date: 12 Oct-16 06:30	Material: Industrial Effluent	Project:
Receipt Date: 12 Oct-16 10:30	Source: Barnhardt (BBA Fiberweb)	
Sample Age: 6h	Station:	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	642353	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

6d Survival Rate Summary

Conc-%	Code	Count	Calculated Variate(A/B)								
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	10	0.9000	0.0000	1.0000	0.1000	0.3162	35.14%	0.0%	9	10
5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
6.25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
12.5		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
25		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
50		10	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	-11.11%	10	10
100		10	0.8000	0.0000	1.0000	0.1333	0.4216	52.70%	11.11%	8	10

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1

CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 4 of 6)

Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 19-5986-6946

Endpoint: 6d Survival Rate

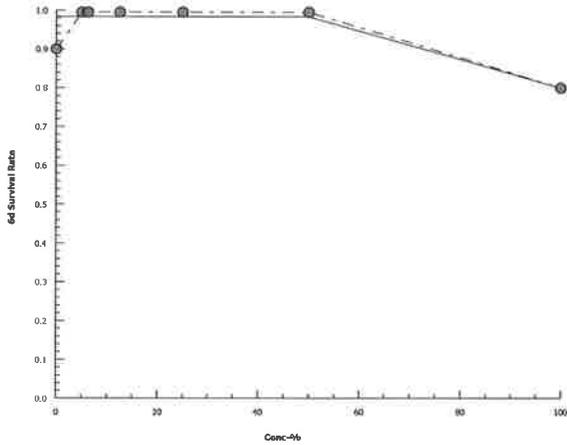
CETIS Version: CETISv1.9.2

Analyzed: 26 Oct-16 13:32

Analysis: Linear Interpolation (ICPIN)

Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 5 of 6)
Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 16-0002-1028	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 26 Oct-16 13:33	Analysis: Linear Interpolation (ICPIN)	Official Results: Yes
Batch ID: 15-9712-1244	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 12 Oct-16 12:27	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 18 Oct-16 12:41	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age: <24h
Sample ID: 16-2112-9423	Code: 60A078CF	Client: Barnhardt
Sample Date: 12 Oct-16 06:30	Material: Industrial Effluent	Project:
Receipt Date: 12 Oct-16 10:30	Source: Barnhardt (BBA Fiberweb)	
Sample Age: 6h	Station:	

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Linear	Linear	2082701	200	Yes	Two-Point Interpolation

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits		Overlap	Decision
		Lower	Upper		
Control Resp	29.5	15	>>	Yes	Passes Criteria

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
IC25	15.87	12.89	19.15	6.3	5.222	7.758
IC50	22.65	19.89	28.85	4.415	3.466	5.028

Reproduction Summary

Conc-%	Code	Count	Calculated Variate						
			Mean	Min	Max	Std Err	Std Dev	CV%	%Effect
0	D	10	29.5	0	36	3.307	10.46	35.45%	0.0%
5		10	33.4	29	39	1.087	3.438	10.29%	-13.22%
6.25		10	29.3	13	40	2.427	7.675	26.19%	0.68%
12.5		10	27.5	16	35	1.572	4.972	18.08%	6.78%
25		10	13	3	28	2.422	7.659	58.92%	55.93%
50		10	0	0	0	0	0		100.0%
100		10	0	0	0	0	0		100.0%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	32	32	31	36	32	34	33	33	0	32
5		39	38	34	35	32	29	32	31	29	35
6.25		29	29	31	31	13	35	34	20	31	40
12.5		26	29	26	35	16	31	27	28	31	26
25		19	28	10	18	3	6	6	12	10	18
50		0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 16-0002-1028

Endpoint: Reproduction

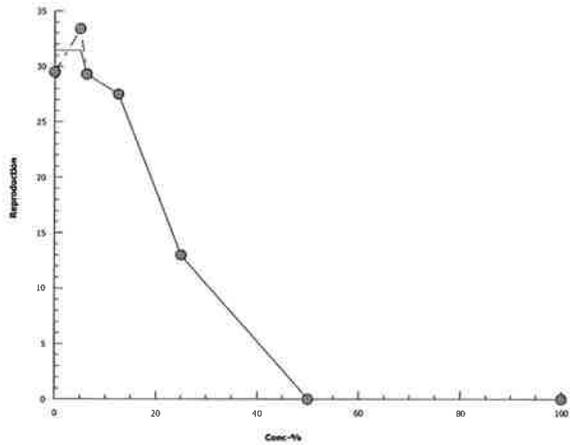
CETIS Version: CETISv1.9.2

Analyzed: 26 Oct-16 13:33

Analysis: Linear Interpolation (ICPIN)

Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 1 of 2)
Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 19-2847-6848	Endpoint: 6d Survival Rate	CETIS Version: CETISv1.9.2
Analyzed: 26 Oct-16 13:32	Analysis: STP 2xK Contingency Tables	Official Results: Yes
Batch ID: 15-9712-1244	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 12 Oct-16 12:27	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 18 Oct-16 12:41	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age: <24h
Sample ID: 16-2112-9423	Code: 60A078CF	Client: Barnhardt
Sample Date: 12 Oct-16 06:30	Material: Industrial Effluent	Project:
Receipt Date: 12 Oct-16 10:30	Source: Barnhardt (BBA Fiberweb)	
Sample Age: 6h	Station:	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Untransformed	C > T	100	> 100	n/a	1

Fisher Exact/Bonferroni-Holm Test

Control	vs	Group	Test Stat	P-Type	P-Value	Decision(α:5%)
Dilution Water		5	1.0000	Exact	1.0000	Non-Significant Effect
		6.25	1.0000	Exact	1.0000	Non-Significant Effect
		12.5	1.0000	Exact	1.0000	Non-Significant Effect
		25	1.0000	Exact	1.0000	Non-Significant Effect
		50	1.0000	Exact	1.0000	Non-Significant Effect
		100	0.5000	Exact	1.0000	Non-Significant Effect

Data Summary

Conc-%	Code	NR	R	NR + R	Prop NR	Prop R	%Effect
0	D	9	1	10	0.9	0.1	0.0%
5		10	0	10	1	0	-11.11%
6.25		10	0	10	1	0	-11.11%
12.5		10	0	10	1	0	-11.11%
25		10	0	10	1	0	-11.11%
50		10	0	10	1	0	-11.11%
100		8	2	10	0.8	0.2	11.11%

6d Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000
5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	0.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6d Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	0/1	1/1
5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
6.25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
12.5		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
25		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
50		1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
100		1/1	1/1	0/1	1/1	0/1	1/1	1/1	1/1	1/1	1/1

Ceriodaphnia 7-d Survival and Reproduction Test

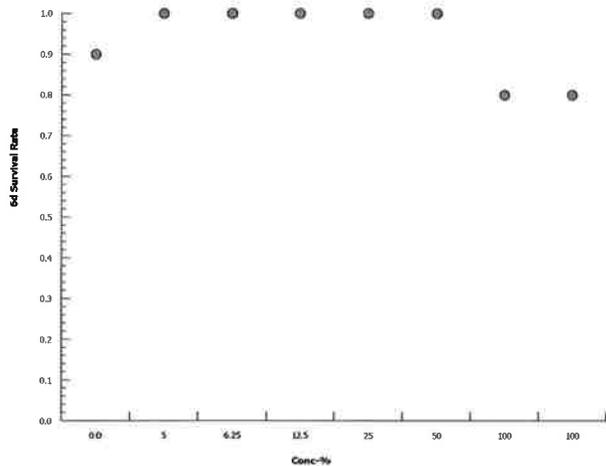
New England Bioassay

Analysis ID: 19-2847-6848
Analyzed: 26 Oct-16 13:32

Endpoint: 6d Survival Rate
Analysis: STP 2xK Contingency Tables

CETIS Version: CETISv1.9.2
Official Results: Yes

Graphics



CETIS Analytical Report

Report Date: 26 Oct-16 13:33 (p 1 of 2)
Test Code: 16-1495 | 01-4901-9412

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 14-6312-1077	Endpoint: Reproduction	CETIS Version: CETISv1.9.2
Analyzed: 26 Oct-16 13:33	Analysis: Nonparametric-Control vs Treatments	Official Results: Yes
Batch ID: 15-9712-1244	Test Type: Reproduction-Survival (7d)	Analyst:
Start Date: 12 Oct-16 12:27	Protocol: EPA/821/R-02-013 (2002)	Diluent: Receiving Water
Ending Date: 18 Oct-16 12:41	Species: Ceriodaphnia dubia	Brine: Not Applicable
Duration: 6d 0h	Source: In-House Culture	Age: <24h
Sample ID: 16-2112-9423	Code: 60A078CF	Client: Barnhardt
Sample Date: 12 Oct-16 06:30	Material: Industrial Effluent	Project:
Receipt Date: 12 Oct-16 10:30	Source: Barnhardt (BBA Fiberweb)	
Sample Age: 6h	Station:	

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Untransformed	C > T	6.25	12.5	8.839	16	24.46%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		5	113	76	3	18	Asymp	0.9401	Non-Significant Effect
		6.25	91	76	2	18	Asymp	0.3481	Non-Significant Effect
		12.5*	74	76	1	18	Asymp	0.0322	Significant Effect
		25*	65	76	0	18	Asymp	0.0046	Significant Effect

Test Acceptability Criteria

Attribute	Test Stat	TAC Limits			Decision
		Lower	Upper	Overlap	
Control Resp	29.5	15	>>	Yes	Passes Criteria
PMSD	0.2446	0.13	0.47	Yes	Passes Criteria

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	2476.92	619.23	4	11.75	1.3E-06	Significant Effect
Error	2371.5	52.7	45			
Total	4848.42		49			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Bartlett Equality of Variance Test	11.23	13.28	0.0241	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.8657	0.9367	4.2E-05	Non-Normal Distribution

Reproduction Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	10	29.5	22.02	36.98	32	0	36	3.307	35.45%	0.00%
5		10	33.4	30.94	35.86	33	29	39	1.087	10.29%	-13.22%
6.25		10	29.3	23.81	34.79	31	13	40	2.427	26.19%	0.68%
12.5		10	27.5	23.94	31.06	27.5	16	35	1.572	18.08%	6.78%
25		10	13	7.521	18.48	11	3	28	2.422	58.92%	55.93%
50		10	0	0	0	0	0	0	0		100.00%
100		10	0	0	0	0	0	0	0		100.00%

Reproduction Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10
0	D	32	32	31	36	32	34	33	33	0	32
5		39	38	34	35	32	29	32	31	29	35
6.25		29	29	31	31	13	35	34	20	31	40
12.5		26	29	26	35	16	31	27	28	31	26
25		19	28	10	18	3	6	6	12	10	18
50		0	0	0	0	0	0	0	0	0	0
100		0	0	0	0	0	0	0	0	0	0

Ceriodaphnia 7-d Survival and Reproduction Test

New England Bioassay

Analysis ID: 14-6312-1077

Endpoint: Reproduction

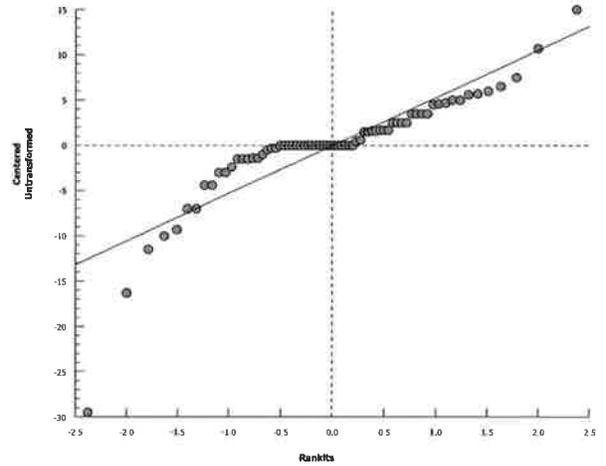
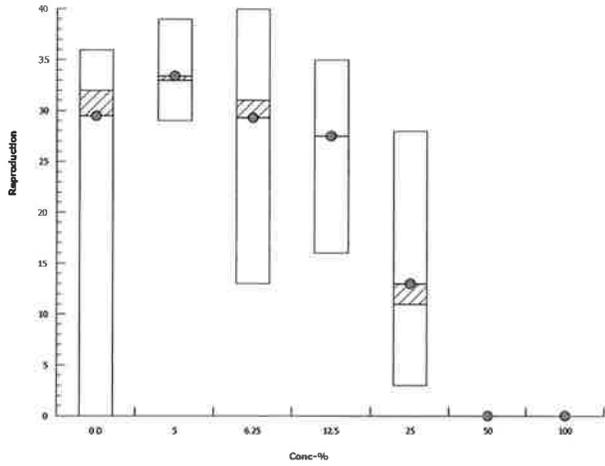
CETIS Version: CETISv1.9.2

Analyzed: 26 Oct-16 13:33

Analysis: Nonparametric-Control vs Treatments

Official Results: Yes

Graphics



NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS: <u>Barnhardt, 247 Main Road, Colrain, MA 01340</u>								
NEB PROJECT NUMBER: <u>05.0044654.00</u>			TEST ORGANISM: <u><i>Ceriodaphnia dubia</i></u>					
DILUTION WATER SOURCE: <u>North River</u>			START DATE: <u>10/12/16</u>			TIME: <u>1227</u>		
ANALYST	ER	CW	KO	CW	CW	ER		
NEB Lab Synthetic Control	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.6	24.7	24.0	24.7	24.3	24.3		
D.O. mg/L Initial	8.4	8.4	8.6	8.4	8.5	8.4		
pH s.u. Initial	7.9	8.0	8.2	8.1	7.9	7.7		
Conductivity µS Initial	320	312	319	312	316	317		
Temp °C Final	24.0	24.3	24.0	24.8	25.3	26.0		
D.O. mg/L Final	8.6	8.6	8.7	8.4	8.5	8.5		
pH s.u. Final	8.3	8.3	8.6	8.0	8.5	8.1		
Conductivity µS Final	342	346	346	339	438	336		
North River Diluent	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.2	25.4	24.3	24.9	25.3	24.9		
D.O. mg/L Initial	9.6	8.6	8.8	9.0	8.6	8.5		
pH s.u. Initial	7.7	7.7	8.1	7.8	7.7	7.7		
Conductivity µS Initial	147	148	148	146	146	140		
Temp °C Final	24.0	24.3	24.0	24.8	25.3	26.0		
D.O. mg/L Final	8.6	8.7	8.7	8.6	8.7	8.6		
pH s.u. Final	8.3	8.4	8.6	7.7	8.2	8.2		
Conductivity µS Final	172	182	174	176	180	158		
5.0%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.2	25.5	24.5	24.9	25.5	25.0		
D.O. mg/L Initial	9.7	8.8	9.1	9.2	8.9	8.5		
pH s.u. Initial	7.6	7.7	7.9	7.8	7.8	7.6		
Conductivity µS Initial	211	224	269	251	261	234		
Temp °C Final	24.0	24.3	24.0	24.9	25.3	26.0		
D.O. mg/L Final	8.5	8.7	8.8	8.6	8.7	8.6		
pH s.u. Final	8.3	8.4	8.7	7.9	8.3	8.3		
Conductivity µS Final	248	268	304	273	296	265		
6.25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.2	25.5	24.7	24.9	25.5	25.0		
D.O. mg/L Initial	9.6	8.8	9.1	9.1	8.8	8.5		
pH s.u. Initial	7.6	7.7	7.9	7.8	7.9	7.6		
Conductivity µS Initial	246	229	276	281	279	263		
Temp °C Final	24.0	24.3	24.0	24.9	25.3	26.0		
D.O. mg/L Final	8.6	8.9	8.8	8.5	8.8	8.7		
pH s.u. Final	8.4	8.5	8.7	8.2	8.3	8.4		
Conductivity µS Final	272	259	301	301	301	284		

NEB'S DATA SHEET FOR ROUTINE CHEMICAL AND PHYSICAL DETERMINATIONS

FACILITY NAME & ADDRESS: <u>Barnhardt, 247 Main Road, Colrain, MA 01340</u>								
NEB PROJECT NUMBER: <u>05.0044654.00</u>			TEST ORGANISM: <u><i>Ceriodaphnia dubia</i></u>					
DILUTION WATER SOURCE: <u>North River</u>				START DATE: <u>10/12/16</u> TIME: <u>1227</u>				
12.5%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.2	25.6	24.7	24.9	25.5	25.1		
D.O. mg/L Initial	9.6	8.7	9.1	9.1	8.7	8.5		
pH s.u. Initial	7.9	7.9	8.0	8.0	8.1	7.7		
Conductivity µS Initial	414	390	451	433	437	403		
Temp °C Final	24.0	24.6	24.0	25.1	25.4	26.0		
D.O. mg/L Final	8.6	8.8	8.8	8.6	8.9	8.8		
pH s.u. Final	8.6	8.7	8.9	8.5	8.5	8.5		
Conductivity µS Final	438	414	468	452	474	421		
25%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.2	25.5	24.7	24.8	25.4	25.0		
D.O. mg/L Initial	9.4	8.7	9.1	9.1	8.8	8.5		
pH s.u. Initial	8.2	8.2	8.3	8.3	8.4	8.1		
Conductivity µS Initial	694	668	745	732	747	690		
Temp °C Final	24.0	24.8	24.0	25.2	25.3	26.0		
D.O. mg/L Final	8.6	8.8	8.8	8.7	8.8	8.7		
pH s.u. Final	8.8	8.9	9.0	8.8	8.7	8.7		
Conductivity µS Final	713	689	765	742	781	707		
50%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.4	25.4	24.6	24.8	25.4	24.9		
D.O. mg/L Initial	9.3	8.7	8.9	9.0	8.7	8.5		
pH s.u. Initial	8.5	8.4	8.5	8.5	8.5	8.3		
Conductivity µS Initial	1,229	1,198	1,367	1,338	1,346	1,230		
Temp °C Final	24.0	24.7	24.0	25.1	25.3	26.0		
D.O. mg/L Final	8.6	8.8	8.8	8.7	8.8	8.7		
pH s.u. Final	9.0	9.1	9.2	9.0	8.9	8.9		
Conductivity µS Final	1,242	1,223	1,388	1,346	1,371	1,239		
100%	1	2	3	4	5	6	7	Remarks
Temp °C Initial	24.7	24.9	24.4	24.6	24.9	24.7		
D.O. mg/L Initial	8.9	8.8	8.7	8.9	8.8	8.6		
pH s.u. Initial	8.5	8.5	8.6	8.6	8.5	8.4		
Conductivity µS Initial	2,309	2,290	2,536	2,503	2,500	2,264		
Temp °C Final	24.0	24.6	24.0	25.2	25.6	26.0		
D.O. mg/L Final	8.6	8.7	8.8	8.7	8.9	8.7		
pH s.u. Final	9.2	9.2	9.3	9.1	9.1	9.0		
Conductivity µS Final	2,460	2,378	2,647	2,520	2,664	2,298		

Table of Random Permutations of 16

C.dubia Test ID#

16-1495

7	12	15	15	1	2	7	16	10	2	14	15	7	13	13	10	6	1	8	10
13	3	8	16	7	10	11	10	13	5	11	7	13	16	7	7	5	13	2	14
3	1	4	5	14	13	3	14	9	13	13	2	9	15	6	2	8	4	5	8
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14	9	1	6	3	9	14	13	8	6	5	8	14	7	3	15	13	11	4	7
2	16	10	13	5	5	13	2	11	7	3	12	5	14	12	16	2	2	9	15
4	6	13	7	2	15	1	9	1	4	7	10	6	9	11	9	7	6	16	11
6	14	6	10	4	14	4	15	3	3	4	16	2	6	5	1	12	10	6	9
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15	7	5	2	10	7	8	12	6	15	6	13	16	12	15	4	11	8	12	6
16	2	11	8	8	8	15	5	16	1	1	9	8	1	8	14	16	5	13	5
9	13	14	3	6	4	10	11	5	12	9	3	10	4	4	3	10	9	1	3
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11	8	16	5	5	13	1	13	2	16	14	12	9	8	7	5	13	3	13	3
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13	4	10	4	16	13	16	13	5	3	6	14	1	16	8	7	2	3	3	12
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2	2	2	15	14	16	9	12	16	6	10	15	14	9	10	1	14	8	8	16
7	12	15	8	12	3	5	14	7	12	5	13	16	1	7	5	11	2	9	3
6	9	7	14	9	14	10	11	15	11	12	1	12	12	14	16	3	11	11	8
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15	11	8	9	7	12	8	7	1	15	9	3	3	7	13	11	10	4	5	1
11	6	6	1	4	1	3	16	12	5	4	9	13	13	6	8	15	9	1	14
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16	16	5	12	11	6	1	3	8	16	3	7	2	5	16	14	13	7	14	15

Ceriodaphnia dubia

Culture Chart

Lot # Call (RMH 228) A

Brood mother source: RMH 228 B-3 Source's brood size: 26 (Qty.)

Barnhardt 10.12.16

Tech	AH	AH	UG	MG	UG		SP	AH		AH	AH					
Date	10.3	10.4	10.5	10.6	10.7		10.9	10.10		10.11	10.12					
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup #																
1	N	N	N	5	0		2y	Y	1	N	Y ^{T1}					
2	N	N	N	5	0		2y	Y	2	N	Y ^{T2}					
3	N	N	N	3	0		2y	Y	3	N	Y ^{T3}					
4	N	N	N	3	0		2y	Y	4	N	Y ^{T4}					
5	N	N	N	2	0		2y	Y	5	N	Y					
6	N	N	N	2	0		2y	Y	6	N	Y ^{T5}					
7	N	N	N	1	0		2y	Y	7	N	Y ^{T6}					
8	N	N	N	3	0		2y	N	8	Y	Y ^{T7}					
9	N	N	N	2	0		2y	Y	9	N	Y ^{T8}					
10	N	N	N	2	0		2y	Y	10	N	Y					
11	N	N	N	2	0		2y	N	11	Y	Y ^{T9}					
12	N	N	N	4	0		2y	N	12	Y	Y					
13	N	N	N	2	0		2y	Y	13	N	Y ^{T10}					

Y = neonates present, and criterion has been met: ≥ 20 neonates produced in total by 3rd brood. N = no neonates
 2B = two broods present. 2Y = two broods and criterion met: ≥ 20 neos. by 3rd brood. X = brood mother dead ae = aborted eggs
 ✓ or P = neonates present after renewal on previous day (see time in log). A → = acceptable for acute testing only
 T# = neonates used in test, replicate number of test noted (and brood counted). acc. = if acclimated, H₂O type used w/ renewal this day.

Test organism collection:

Tray diagram used?

Project #	Symbols (✓/P)	(Y/N)	Time period, neonates released	Collection date / time
<u>0044654</u>	T	Y	10.11.16/1630 → 10.12.16/0730	10.12.16/1140
	T			
	T			
	T			
	T			
	T			

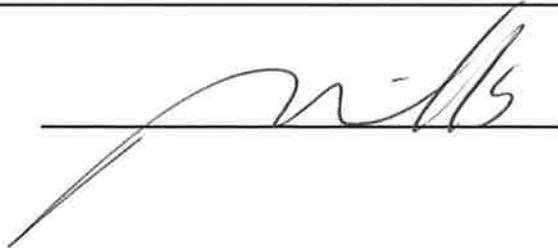
**NEW ENGLAND BIOASSAY
INITIAL CHEMISTRY DATA**

CLIENT: Barnhardt
 NEB JOB # 05.0044654.00
 TEST ID # C.dubia 16-1495

DATE RECEIVED	10/12/16		10/14/16		10/17/16	
SAMPLE TYPE:	EFF #1	RIVER #1	EFF #2	RIVER #2	EFF #3	RIVER #3
COC #	C36-3565	C36-3566	C36-3598	C36-3599	C36-3617	C36-3618
pH (SU)	8.5	7.5	8.4	7.5	8.3	7.3
Temperature (°C)	7.4	5.3	11.5	9.1	6.2	8.0
Dissolved Oxygen (mg/L)	9.0	9.2	8.9	9.5	8.6	8.4
Conductivity (µmhos)	2,319	142	2,555	144	2,291	135
Salinity (ppt)	1	< 1	1	< 1	1	< 1
TRC - DPD (mg/L)	0.010	0.003	0.002	0.008	<0.001	0.005
TRC - Amperometric (mg/L)	N/A	N/A	N/A	N/A	N/A	N/A
Hardness (mg/L as CaCO ₃)	80	46	84	44	86	42
Alkalinity (mg/l as CaCO ₃)	1,060	45	1,205	40	1,075	40
Tech Initials	CW	CW	PD	PD	CW	CW

NOTE: NA = NOT APPLICABLE

Data Reviewed By: _____



Date Reviewed: _____

11/9/16

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set # 2

EFFLUENT

Sampler: Keith Gammell
Title: operator
Facility: Barnhardt Manufacturing

Sampling Method: Composite
Sample ID: Effluent # 2
Start Date: 10-11-16 Time: 6:30 am
End Date: 10-12-16 Time: 6:30 am

Sampling Method: Grab (for pH and TRC only)
Date Collected: 10-12-16
Time Collected: 7 am

Sample Type: Prechlorinated
 Dechlorinated
 Unchlorinated
 Chlorinated

Effluent Sampling Location and Procedures: composite sampler on effluent

Receiving Water Sampling Location and Procedures: sample grab - North River

Requested Analysis: Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier
Relinquished By: [Signature] Date: 10-12-16 Time: 0835
Received By: [Signature] Date: 10-12-16 Time: 0835
Relinquished By: [Signature] Date: 10-12-16 Time: 1030
Received By: [Signature] Date: 10/12/16 Time: 1030

Optional Information

Purchase Order # to reference on invoice: _____

FOR NEB USE ONLY

* Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.

Temperature of Effluent Upon Receipt at Lab: 7.4 °C
Temperature of Receiving Water Upon Receipt at Lab: 5.3 °C
Effluent COC# C36-3565
Receiving Water COC# C35-3566

(cooler provided had an odor of gasoline)

IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set # 2

EFFLUENT

Sampler: Keith Gamell
Title: operator
Facility: Barnhardt Manufacturing

RECEIVING WATER

Sampler: Keith Gamell
Title: operator
Facility: Barnhardt Manufacturing

Sampling Method: X Composite
Sample ID: Effluent # 2
Start Date: 10-13-16 Time: 6:30 am
End Date: 10-14-16 Time: 6:30 am

Sampling Method: X Grab
Sample ID: North River # 2
Date Collected: 10-14-16
Time Collected: 7am

Sampling Method: Grab (for pH and TRC only X)
Date Collected: 10-14-16
Time Collected: 6:30 am

Sample Type: Prechlorinated
 Dechlorinated
 Unchlorinated
 Chlorinated

Effluent Sampling Location and Procedures: composite sampler on Effluent

Receiving Water Sampling Location and Procedures: sample grab - North River

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier
Relinquished By: [Signature] Date: 10-14-16 Time: 9:00 A
Received By: Chrys Raul Date: 10-14-16 Time: 9:00 A
Relinquished By: Chrys Raul Date: 10-14-16 Time: 10:33 A
Received By: [Signature] Date: 10-14-16 Time: 10:33

Optional Information

Purchase Order # to reference on invoice:

FOR NEB USE ONLY

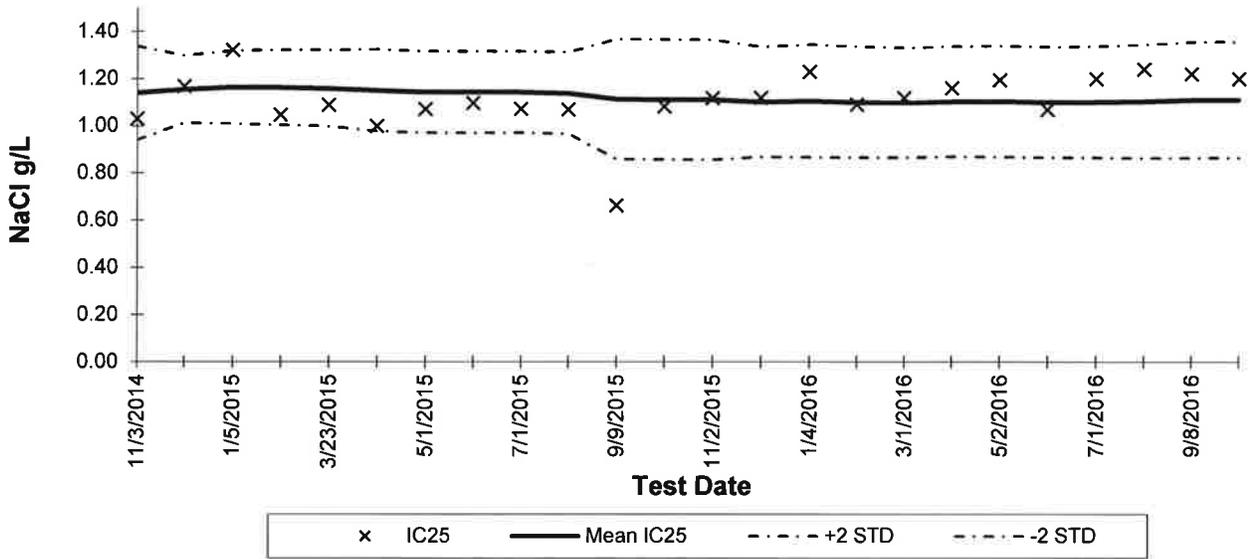
* Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.

Temperature of Effluent Upon Receipt at Lab: 11.5 °C
Temperature of Receiving Water Upon Receipt at Lab: 9.1 °C
Effluent COC# C36-3548
Receiving Water COC# C36-3548

IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042

New England Bioassay
Reference Toxicant Data: *Ceriodaphia dubia* Chronic Reproduction IC25

Reference Toxicant: Sodium chloride
Test Dates: Nov 2014 - Oct 2016



Test ID	Date	IC ₂₅	Mean IC ₂₅	STD	-2STD	+2STD	CV	CV National	CV National
								75th%	90th%
14-1886	11/3/2014	1.03	1.14	0.10	0.94	1.34	0.09	0.45	0.62
14-1982	12/1/2014	1.17	1.15	0.07	1.01	1.30	0.06	0.45	0.62
15-79	1/5/2015	1.32	1.16	0.08	1.01	1.32	0.07	0.45	0.62
15-148	2/2/2015	1.05	1.16	0.08	1.00	1.32	0.07	0.45	0.62
15-378	3/23/2015	1.09	1.16	0.08	1.00	1.32	0.07	0.45	0.62
15-460	4/1/2015	1.00	1.15	0.09	0.98	1.32	0.08	0.45	0.62
15-602	5/1/2015	1.07	1.14	0.09	0.97	1.32	0.08	0.45	0.62
15-750	6/1/2015	1.10	1.14	0.09	0.97	1.32	0.08	0.45	0.62
15-955	7/1/2015	1.07	1.14	0.09	0.97	1.32	0.07	0.45	0.62
15-1211	8/3/2015	1.07	1.14	0.09	0.97	1.31	0.08	0.45	0.62
15-1375	9/9/2015	0.66	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1540	10/1/2015	1.08	1.11	0.13	0.86	1.37	0.11	0.45	0.62
15-1691	11/2/2015	1.12	1.11	0.13	0.86	1.36	0.11	0.45	0.62
15-1897	12/28/2015	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-37	1/4/2016	1.23	1.11	0.12	0.87	1.34	0.11	0.45	0.62
16-138	2/1/2016	1.09	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-307	3/1/2016	1.12	1.10	0.12	0.87	1.33	0.11	0.45	0.62
16-463	4/1/2016	1.16	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-596	5/2/2016	1.19	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-707	6/1/2016	1.07	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-880	7/1/2016	1.20	1.10	0.12	0.87	1.34	0.11	0.45	0.62
16-1212	8/24/2016	1.24	1.10	0.12	0.86	1.34	0.11	0.45	0.62
16-1258	9/8/2016	1.22	1.11	0.12	0.87	1.35	0.11	0.45	0.62
16-1553	10/24/2016	1.20	1.11	0.12	0.87	1.36	0.11	0.45	0.62



Thursday, October 20, 2016

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MRG
Sample ID#s: BV46436 - BV46437

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in cursive script that reads "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 20, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21847

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date Time

10/12/16 6:30
10/12/16 15:13

Laboratory Data

SDG ID: GBV46436
Phoenix ID: BV46436

Project ID: BARNHARDT MRG
Client ID: EFFLUENT 1 C36-3565

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.043	0.010	mg/L	1	10/14/16	LK	E200.7
Calcium	21.3	0.010	mg/L	1	10/14/16	LK	E200.7
Cadmium	0.0003	0.0001	mg/L	1	10/14/16	RS	SM3113B
Copper	0.029	0.002	mg/L	1	10/14/16	LK	E200.7
Hardness (CaCO3)	90.8	0.1	mg/L	1	10/14/16		E200.7
Magnesium	9.13	0.010	mg/L	1	10/14/16	LK	E200.7
Nickel	0.003	0.001	mg/L	1	10/14/16	LK	E200.7
Lead	0.0004	0.0003	mg/L	1	10/13/16	RS	SM3113B
Zinc	0.049	0.002	mg/L	1	10/14/16	LK	E200.7
Alkalinity-CaCO3	995	5.00	mg/L	1	10/13/16	RR/EG	SM2320B-97
Chlorine Residual	< 0.10	0.10	mg/L	5	10/12/16 17:46	O	SM4500CLG-97
Conductivity	2120	5.00	umhos/cm	1	10/13/16	RR/EG	SM2510B-97
Ammonia as Nitrogen	0.28	0.05	mg/L	1	10/19/16	WHM	E350.1
pH	8.64	0.10	pH Units	1	10/13/16 05:23	RR/EG	SM4500-H B-00
Tot. Diss. Solids	1500	50	mg/L	5	10/13/16	KH	SM2540C-97
Tot. Org. Carbon	53.0	2.5	mg/L	5	10/17/16	RWR	SM5310C/E415.1-00
Total Solids	1700	50	mg/L	5	10/14/16	KH	SM2540B-97
Total Metals Digestion	Completed				10/13/16	AG	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
-----------	--------	------------	-------	----------	-----------	----	-----------

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.



Phyllis Shiller, Laboratory Director

October 20, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 20, 2016

FOR: Attn: Ms. Kim Wills
 New England Bioassay
 a Division of GZA GeoEnvironmental
 77 Batson Drive
 Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
 Location Code: NEB
 Rush Request: Standard
 P.O.#: 21847

Custody Information

Collected by:
 Received by: B
 Analyzed by: see "By" below

Date

10/12/16
 10/12/16

Time

7:00
 15:13

Laboratory Data

SDG ID: GBV46436
 Phoenix ID: BV46437

Project ID: BARNHARDT MRG
 Client ID: RECEIVING WATER 1 C36-3566

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	< 0.010	0.010	mg/L	1	10/14/16	LK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	10/14/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	10/14/16	LK	E200.7
Hardness (CaCO3)	45.7	0.1	mg/L	1	10/14/16		E200.7
Nickel	< 0.001	0.001	mg/L	1	10/14/16	LK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/13/16	RS	SM3113B
Zinc	< 0.002	0.002	mg/L	1	10/14/16	LK	E200.7
Alkalinity-CaCO3	50.8	5.00	mg/L	1	10/13/16	RR/EG	SM2320B-97
Conductivity	134	5.00	umhos/cm	1	10/13/16	RR/EG	SM2510B-97
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	10/19/16	WHM	E350.1
pH	7.34	0.10	pH Units	1	10/13/16 05:28	RR/EG	SM4500-H B-00
Tot. Org. Carbon	1.66	0.50	mg/L	1	10/17/16	RWR	SM5310C/E415.1-00
Total Metals Digestion	Completed				10/13/16	AG	

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director

October 20, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

October 20, 2016

QA/QC Data

SDG I.D.: GBV46436

Parameter	Blank	Bik RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 361841 (mg/L), QC Sample No: BV40331 (BV46436, BV46437)													
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	112			>130			75 - 125	20
Lead (Furnace) - Water	BRL	0.001	0.006	0.007	15.4	108			102			75 - 125	30
QA/QC Batch 362548 (mg/L), QC Sample No: BV45257 (BV46436, BV46437)													
Cadmium - Water	BRL	0.0001	0.0001	0.0001	NC	102			104			75 - 125	20
QA/QC Batch 362747 (mg/L), QC Sample No: BV46565 (BV46436, BV46437)													
<u>ICP Metals - Aqueous</u>													
Aluminum	BRL	0.010	0.043	0.044	NC	102			117			75 - 125	20
Calcium	BRL	0.010	16.0	16.6	3.70	102			NC			75 - 125	20
Copper	BRL	0.005	0.015	0.012	NC	103			117			75 - 125	20
Magnesium	BRL	0.010	0.153	0.159	3.80	108			111			75 - 125	20
Nickel	BRL	0.001	0.069	0.072	4.30	104			108			75 - 125	20
Zinc	BRL	0.002	0.003	0.003	NC	102			111			75 - 125	20

m = This parameter is outside laboratory MS/MSD specified recovery limits.



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

October 20, 2016

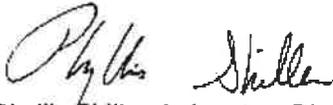
QA/QC Data

SDG I.D.: GBV46436

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 362686 (mg/L), QC Sample No: BV45784 (BV46436)													
Tot. Diss. Solids	BRL	10	140	130	7.40	95.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 363263 (mg/L), QC Sample No: BV46390 (BV46436, BV46437)													
Ammonia as Nitrogen	BRL	0.05	<0.05	<0.05	NC	97.1			87.0			85 - 115	20
QA/QC Batch 362719 (mg/L), QC Sample No: BV46393 (BV46436, BV46437)													
Alkalinity-CaCO3	BRL	5.00	95	95	NC	98.9						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 362727 (umhos/cm), QC Sample No: BV46393 (BV46436, BV46437)													
Conductivity	BRL	5.00	291	286	1.70	94.8						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 362715 (pH), QC Sample No: BV46393 (BV46436, BV46437)													
pH			7.2	7.47	3.70	98.9						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 362846 (mg/L), QC Sample No: BV46433 (BV46436)													
Total Solids	BRL	10	540	550	1.80	99.0						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 362569 (mg/L), QC Sample No: BV46445 (BV46436)													
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	108							
QA/QC Batch 363214 (mg/L), QC Sample No: BV53012 (BV46436, BV46437)													
Total Organic Carbon	BRL	1.0	0.7	0.7 B	NC	102			102			85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria
- Intf - Interference


 Phyllis Shiller, Laboratory Director
 October 20, 2016

Sample Criteria Exceedences Report

GBV46436 - NEB

Criteria: None

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL	Analysis Units
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*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.





CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
 Email: service@phoenixlabs.com Fax (860) 645-0823

Client Services (860) 645-8726

Customer: New England Bioassay
 Address: 77 Baisson Drive
Manchester, CT 06042

Project: Barnhart MS (MA)
 Report to: Kim Willis
 Invoice to: Kim Willis

Project P.O.: 21847
 Phone #: 860-643-9560
 Fax #: 860-646-7169

Data Delivery (check one):
 Fax #:
 Email: kimberly.wills@gza.com
 Format: Excel Pdf GIS Key

Client Sample - Information - Identification

Sampler's Signature _____ Date _____

Matrix Codes:
 DW=drinking water
 GW=groundwater
 WW=wastewater
 SL=sludge
 S=soil/solid
 A=air
 O=other

Phoenix Sample #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled
46436	Effluent - 1 C36-3505	WW	10/11/16	0630
46437	Receiving Water - 1 C36-3506	O	10/12/16	0700
	Effluent grab - 1	WW		

Analysis Request

Analysis Request	Alkalinity (0.5 mg/L)	Hardness (0.5 mg/L)	Total Solids (-)	Total Dissolved Solids (-)	Ammonia (0.1 mg/L)	Cd (AA), Pb (AA), Cu, Zn, Ni, Al Total Residual Chlorine (0.02 mg/L)	pH (-)	Soil VOA Vials (methanol) (Soil Baseline)	GL Soil Container (-)	PL 120 As Is	PL Amber 120ml (As Is) (H2SO4)	PL As Is (X) 500ml (1000ml)	PL H2SO4 (X) 250ml (1000ml)	PL HNO3 (X) 250ml (1000ml)	Bacteria Bottle
	X	X	X	X	X	X	X			1	1	1	1	1	
	X	X	X	X	X	X	X			1	1	1	1	1	

Relinquished by: [Signature] Date: 10/12/16 Time: 2:45
 Accepted by: [Signature] Date: 10/12/16 Time: 15:13

Turnaround:
 1 Day*
 2 Days*
 3 Days*
 Standard
 Other
 * Surcharge Applies

Requirements for CT:
 Res. Criteria
 GW Protection
 GA Mobility
 GB Mobility
 SW Protection
 Res. Vol.
 Ind. Vol.

Requirements for MA:
 GW-1
 GW-2
 GW-3
 S-1
 S-2
 S-3
 MCP Certification
 Other

Comments, Special Requirements or Regulations:

Please see detection limits (MLs) listed next to each parameter above. Metals MLs are listed below:

Cd - 0.0005 mg/L; Pb - 0.0005 mg/L; Cu - 0.003 mg/L; Zn - 0.005 mg/L; Ni - 0.005 mg/L; Al - 0.02 mg/L

Please CC: Melanie.Cruff@gza.com and Robin.Faulk@gza.com on reports



Monday, October 24, 2016

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
Sample ID#s: BV50847 - BV50848

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in cursive script that reads "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 24, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21847

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date Time

10/14/16 6:30
10/14/16 15:12

Laboratory Data

SDG ID: GBV50847
Phoenix ID: BV50847

Project ID: BARNHARDT MFG
Client ID: EFFLUENT 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.48	0.10	mg/L	2	10/21/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

October 24, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report
 October 24, 2016

FOR: Attn: Ms. Kim Wills
 New England Bioassay
 a Division of GZA GeoEnvironmental
 77 Batson Drive
 Manchester, CT 06040

Sample Information

Matrix: WATER
 Location Code: NEB
 Rush Request: Standard
 P.O.#: 21847

Custody Information

Collected by:
 Received by: B
 Analyzed by: see "By" below

Date Time

10/14/16 7:00
 10/14/16 15:12

Laboratory Data

SDG ID: GBV50847
 Phoenix ID: BV50848

Project ID: BARNHARDT MFG
 Client ID: RECEIVING WATER 2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	10/21/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director

October 24, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045

Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

October 24, 2016

QA/QC Data

SDG I.D.: GBV50847

Parameter	Blank	Bik	Sample	Dup	Dup	LCS	LCSD	LCS	MS	MSD	MS	%	%
		RL	Result	Result	RPD	%	%	RPD	%	%	RPD	Rec	RPD
QA/QC Batch 363588 (mg/L), QC Sample No: BV50985 (BV50847, BV50848)													
Ammonia as Nitrogen	BRL	0.05	0.20	0.21	NC	100				89.1		85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria
- Intf - Interference


 Phyllis Shiller, Laboratory Director
 October 24, 2016

Sample Criteria Exceedances Report

GBV50847 - NEB

Criteria: None

State: MA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL	Analysis Units
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*** No Data to Display ***

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Monday, October 24, 2016

**Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040**

**Project ID: BARNHARDT MFG
Sample ID#s: BV53885 - BV53886**

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in black ink that reads "Phyllis Shiller".

Phyllis Shiller
Laboratory Director

**NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B**

**NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301**



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report
 October 24, 2016

FOR: Attn: Ms. Kim Wills
 New England Bioassay
 a Division of GZA GeoEnvironmental
 77 Batson Drive
 Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
 Location Code: NEB
 Rush Request: Standard
 P.O.#: 21847

Custody Information

Collected by:
 Received by: B
 Analyzed by: see "By" below

Date Time

10/17/16 5:30
 10/17/16 15:39

Laboratory Data

SDG ID: GBV53885
 Phoenix ID: BV53885

Project ID: BARNHARDT MFG
 Client ID: EFFLUENT 3 C36-3617

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.48	0.10	mg/L	2	10/21/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
 This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

October 24, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

October 24, 2016

FOR: Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Sample Information

Matrix: WATER
Location Code: NEB
Rush Request: Standard
P.O.#: 21847

Custody Information

Collected by:
Received by: B
Analyzed by: see "By" below

Date Time

10/17/16 6:00
10/17/16 15:39

Laboratory Data

SDG ID: GBV53885
Phoenix ID: BV53886

Project ID: BARNHARDT MFG
Client ID: RECEIVING WATER 3 C36-3618

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Ammonia as Nitrogen	0.05	0.05	mg/L	1	10/21/16	WHM	E350.1

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
This report must not be reproduced except in full as defined by the attached chain of custody.

Phyllis Shiller, Laboratory Director

October 24, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report
 October 24, 2016

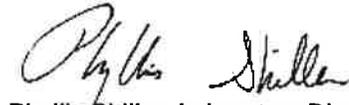
QA/QC Data

SDG I.D.: GBV53885

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 363706 (mg/L), QC Sample No: BV53885 (BV53885, BV53886)													
Ammonia as Nitrogen	BRL	0.05	0.48	0.48	0	103			101			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria
- Intf - Interference


 Phyllis Shiller, Laboratory Director
 October 24, 2016

Sample Criteria Exceedances Report

Criteria: None

State: MA

GBV53885 - NEB

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL	Criteria	Analysis Units
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*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedances. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

NEW ENGLAND BIOASSAY - CHAIN-OF-CUSTODY

Sample Set #1

EFFLUENT

Sampler: Keith Gammell
Title: Operator
Facility: Barnhardt Manufacturing

RECEIVING WATER

Sampler: Keith Gammell
Title: Operator
Facility: Barnhardt Manufacturing

Sampling Method: X Composite
Sample ID: Effluent #1
Start Date: 10-9-16 Time: 6:30am
End Date: 10-10-16 Time: 6:30am

Sampling Method: X Grab
Sample ID: North River #1
Date Collected: 10-10-16
Time Collected: 7am

Sampling Method: X Grab (for pH and TRC only X)
Date Collected: 10-10-16
Time Collected: 7am

Sample Type: Prechlorinated
Dechlorinated
Unchlorinated
Chlorinated

Effluent Sampling Location and Procedures: composite sampler on effluent

Receiving Water Sampling Location and Procedures: sample grab - North river

Requested Analysis: X Chronic and modified acute

Sample Shipment

Method of Shipment: NEB Courier

Relinquished By: [Signature] Date: 10-10-16 Time: 0855
Received By: [Signature] Date: 10-10-16 Time: 0855
Relinquished By: [Signature] Date: 10-10-16 Time: 1052
Received By: [Signature] Date: 10/10/16 Time: 1052

Optional Information

Purchase Order # to reference on invoice:

FOR NEB USE ONLY

* Please return all ice packs NEB has provided to insure accurate temperature upon receipt to the NEB laboratory.

Temperature of Effluent Upon Receipt at Lab: 3.2 °C Temperature of Receiving Water Upon Receipt at Lab: 2.7 °C

Effluent COC# C36-3548 Receiving Water COC# C36-3549

IF THIS COOLER IS MISPLACED OR THE LABEL IS LOST, PLEASE SHIP TO:
KIM WILLS, NEW ENGLAND BIOASSAY 77 BATSON DRIVE MANCHESTER, CT 06042



Tuesday, October 18, 2016

Attn: Ms. Kim Wills
New England Bioassay
a Division of GZA GeoEnvironmental
77 Batson Drive
Manchester, CT 06040

Project ID: BARNHARDT MFG
Sample ID#s: BV42961 - BV42963

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,

A handwritten signature in cursive script that reads "Phyllis Shiller".

Phyllis Shiller

Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report
 October 18, 2016

FOR: Attn: Ms. Kim Wills
 New England Bioassay
 a Division of GZA GeoEnvironmental
 77 Batson Drive
 Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
 Location Code: NEB
 Rush Request: Standard
 P.O.#: 21847

Custody Information

Collected by:
 Received by: LB
 Analyzed by: see "By" below

Date Time
 10/10/16 6:30
 10/10/16 14:22

Laboratory Data

SDG ID: GBV42961
 Phoenix ID: BV42961

Project ID: BARNHARDT MFG
 Client ID: EFFLUENT 1 C36-3548

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	0.042	0.010	mg/L	1	10/12/16	EK	E200.7
Calcium	20.7	0.010	mg/L	1	10/12/16	EK	E200.7
Cadmium	0.0004	0.0002	mg/L	1	10/11/16	RS	SM3113B
Chromium	0.003	0.001	mg/L	1	10/12/16	EK	E200.7
Copper	0.026	0.002	mg/L	1	10/12/16	EK	E200.7
Hardness (CaCO3)	88.8	0.1	mg/L	1	10/14/16		E200.7
Magnesium	9.02	0.010	mg/L	1	10/12/16	EK	E200.7
Nickel	0.004	0.001	mg/L	1	10/14/16	EK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/13/16	RS	SM3113B
Zinc	0.046	0.002	mg/L	1	10/12/16	EK	E200.7
Alkalinity-CaCO3	1080	5.00	mg/L	1	10/11/16	RR/EG	SM2320B-97
Conductivity	2210	5.00	umhos/cm	1	10/11/16	RR/EG	SM2510B-97
Ammonia as Nitrogen	0.33	0.05	mg/L	1	10/17/16	WHM	E350.1
Tot. Diss. Solids	1500	50	mg/L	5	10/11/16	CL/KH	SM2540C-97
Tot. Org. Carbon	61.0	2.5	mg/L	5	10/11/16	RR/EG	SM5310C/E415.1-00
Total Solids	1800	100	mg/L	10	10/12/16	KH	SM2540B-97
Total Metals Digestion	Completed				10/11/16	AG	

B*

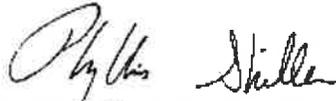
Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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B* = Present in blank, a bias is possible.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director

October 18, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report
 October 18, 2016

FOR: Attn: Ms. Kim Wills
 New England Bioassay
 a Division of GZA GeoEnvironmental
 77 Batson Drive
 Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
 Location Code: NEB
 Rush Request: Standard
 P.O.#: 21847

Custody Information

Collected by:
 Received by: LB
 Analyzed by: see "By" below

Date Time

10/10/16 7:00
 10/10/16 14:22

Laboratory Data

SDG ID: GBV42961
 Phoenix ID: BV42962

Project ID: BARNHARDT MFG
 Client ID: RECEIVING WATER 1 C36-3549

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Aluminum	< 0.010	0.010	mg/L	1	10/12/16	EK	E200.7
Cadmium	< 0.0001	0.0001	mg/L	1	10/11/16	RS	SM3113B
Copper	< 0.002	0.002	mg/L	1	10/12/16	EK	E200.7
Hardness (CaCO3)	45.7	0.1	mg/L	1	10/14/16		E200.7
Nickel	< 0.001	0.001	mg/L	1	10/14/16	EK	E200.7
Lead	< 0.0003	0.0003	mg/L	1	10/13/16	RS	SM3113B
Zinc	0.002	0.002	mg/L	1	10/12/16	EK	E200.7
Alkalinity-CaCO3	51.2	5.00	mg/L	1	10/11/16	RR/EG	SM2320B-97
Conductivity	134	5.00	umhos/cm	1	10/11/16	RR/EG	SM2510B-97
Ammonia as Nitrogen	< 0.05	0.05	mg/L	1	10/17/16	WHM	E350.1
pH	7.21	0.10	pH Units	1	10/11/16 02:15	RR/EG	SM4500-H B-00
Tot. Org. Carbon	2.15	0.50	mg/L	1	10/11/16	RR/EG	SM5310C/E415.1-00
Total Metals Digestion	Completed				10/11/16	AG	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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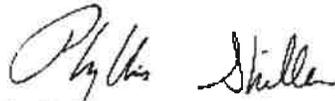
B = Present in blank, no bias suspected.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director

October 18, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report
 October 18, 2016

FOR: Attn: Ms. Kim Wills
 New England Bioassay
 a Division of GZA GeoEnvironmental
 77 Batson Drive
 Manchester, CT 06040

Sample Information

Matrix: WASTE WATER
 Location Code: NEB
 Rush Request: Standard
 P.O.#: 21847

Custody Information

Collected by:
 Received by: LB
 Analyzed by: see "By" below

Date Time

10/10/16 7:00
 10/10/16 14:22

Laboratory Data

SDG ID: GBV42961
 Phoenix ID: BV42963

Project ID: BARNHARDT MFG
 Client ID: EFFLUENT GRAB 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlorine Residual	0.10	0.10	mg/L	5	10/10/16 17:49	O	SM4500CLG-97
pH	8.60	0.10	pH Units	1	10/11/16 02:18	RR/EG	SM4500-H B-00

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

The regulatory hold time for Chlorine is immediately. This Chlorine was performed in the laboratory and may be considered outside of hold-time.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.
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Phyllis Shiller, Laboratory Director

October 18, 2016

Reviewed and Released by: Deb Lawrie, Project Manager



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report
 October 18, 2016

QA/QC Data

SDG I.D.: GBV42961

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 361841 (mg/L), QC Sample No: BV40331 (BV42961, BV42962)													
Cadmium - Water	BRL	0.0001	<0.0001	<0.0001	NC	112			>130			75 - 125	20 m
Lead (Furnace) - Water	BRL	0.001	0.006	0.007	15.4	108			102			85 - 115	20
QA/QC Batch 362404 (mg/L), QC Sample No: BV42908 (BV42961, BV42962)													
<u>ICP Metals - Aqueous</u>													
Aluminum	BRL	0.010	<0.010	<0.010	NC	102			104			75 - 125	20
Calcium	BRL	0.010	<0.010	<0.010	NC	104			107			75 - 125	20
Chromium	BRL	0.001	<0.001	<0.001	NC	106			108			75 - 125	20
Copper	BRL	0.005	<0.005	<0.005	NC	105			107			75 - 125	20
Magnesium	BRL	0.010	<0.010	<0.010	NC	109			111			75 - 125	20
Nickel	0.001	0.001	<0.001	0.001	NC	105			108			75 - 125	20
Zinc	BRL	0.002	<0.002	<0.002	NC	104			107			75 - 125	20

m = This parameter is outside laboratory MS/MSD specified recovery limits.



Environmental Laboratories, Inc.
 587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
 Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

October 18, 2016

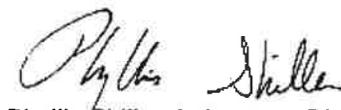
QA/QC Data

SDG I.D.: GBV42961

Parameter	Blank	Bik RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 362337 (mg/L), QC Sample No: BV42615 (BV42961)													
Tot. Diss. Solids	BRL	10	210	210	0	94.0						85 - 115	20
QA/QC Batch 362461 (mg/L), QC Sample No: BV42961 (BV42961)													
Total Solids	BRL	10	1800	1900	5.40	99.0						85 - 115	20
QA/QC Batch 362344 (mg/L), QC Sample No: BV42965 (BV42961, BV42962)													
Tot. Org. Carbon	BRL	0.5		2.73		103			97.0			85 - 115	20
QA/QC Batch 362279 (mg/L), QC Sample No: BV42966 (BV42963)													
Chlorine Residual	BRL	0.02	<0.02	<0.02	NC	106							
QA/QC Batch 362361 (mg/L), QC Sample No: BV43013 (BV42961, BV42962)													
Alkalinity-CaCO3	BRL	6.00	94	92	NC	100						85 - 115	20
QA/QC Batch 362367 (umhos/cm), QC Sample No: BV43013 (BV42961, BV42962)													
Conductivity	BRL	5.00	465	461	0.90	95.4						85 - 115	20
QA/QC Batch 362358 (pH), QC Sample No: BV43013 (BV42962, BV42963)													
pH			7.30	7.21	1.20	98.5						85 - 115	20
QA/QC Batch 362843 (mg/L), QC Sample No: BV50183 (BV42961, BV42962)													
Ammonia as Nitrogen	BRL	0.05	28.0	29.0	3.50	95.6			98.0			85 - 115	20

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

- RPD - Relative Percent Difference
- LCS - Laboratory Control Sample
- LCSD - Laboratory Control Sample Duplicate
- MS - Matrix Spike
- MS Dup - Matrix Spike Duplicate
- NC - No Criteria
- Intf - Interference


 Phyllis Shiller, Laboratory Director
 October 18, 2016

Sample Criteria Exceedences Report

Criteria: None

State: CT

GBV42961 - NEB

SampNo Acode Phoenix Analyte Criteria

RL Analysis
Criteria Units

Result

Criteria

RL
Criteria

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.



Brood mother source: RmH 226 D-3 Source's brood size: 13 (Qty.)

Barnhardt 10.10.16

Tech	A1	AH	AG	MG	MS		S/P	AH								
Date	10.3	10.4	10.5	10.6	10.7		10.9	10.10								
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup #																
1	N	N	N	N	1		8	Y ^{T1} ₁₅	1							
2	N	N	N	N	3		10	Y	2							
3	N	N	N	N	3		10	Y ^{T2} ₁₅	3							
4	N	N	N	N	4		9	Y ^{T1} ₁₃	4							
5	N	N	N	N	2		10	Y ^{T3} ₁₂	5							
6	N	N	N	N	4		9	Y ^{T4} ₁₅	6							
7	N	N	N	N	1		7	Y ^{T2} ₁₅	7							
8	N	N	N	N	2		10	Y ^{T3} ₁₆	8							
9	N	N	N	N	3		10	Y ^{T5} ₁₅	9							
10	N	N	N	N	1		8	Y	10							
11	N	N	N	N	4		9	Y ^{T4} ₁₃	11							
12	N	N	N	N	1		9	Y	12							
13	N	N	N	N	4		10	Y ^{T5} ₁₂	13							

Y = neonates present, and criterion has been met: ≥ 20 neonates produced in total by 3rd brood. N = no neonates
 2B = two broods present. 2Y = two broods and criterion met: ≥ 20 neos. by 3rd brood. X = brood mother dead ae = aborted eggs
 ✓ or P = neonates present after renewal on previous day (see time in log). A→ = acceptable for acute testing only
 T# = neonates used in test, replicate number of test noted (and brood counted). acc. = if acclimated, H₂O type used w/ renewal this day.

Test organism collection:

Tray diagram used?

Project #	Symbols (✓/P)	(Y/N)	Time period, neonates released	Collection date / time
0044654	T	Y	10.9.16/1630 → 10.9.16/1800	10.10.16/1100
0044158	T	Y	10.9.16/1800 → 10.10.16/0800	10.10.16/1145
	T			
	T			
	T			
	T			

Brood mother source: RMH 226 D-8 Source's brood size: 16 (Qty.)

Barnhardt 10.10.16

Tech	AH	AH	MS	MS	MS	SP	AH									
Date	10-3	10-4	10-5	10-6	10-7		10-9	10-10								
Day acc.	0	1	2	3	4	5	6	7		8	9	10	11	12	13	14
Cup #																
1	N	N	N	N	4		9	T6 Y 17	1							
2	N	N	N	N	3		10	T6 13Y	2							
3	N	N	N	N	5		10	T7 Y 12	3							
4	N	N	N	N	2		9	T7 Y 14	4							
5	N	N	N	N	3		8	Y	5							
6	N	N	N	N	3		10	T8 Y 12	6							
7	N	N	N	N	4		10	T8 12Y	7							
8	N	N	N	N	4		9	T9 16Y	8							
9	N	N	N	N	3		10	T9 Y 13	9							
10	N	N	N	N	3		10	Y	10							
11	N	N	N	N	2		9	T10 Y 14	11							
12	N	N	N	N	2		11	T10 Y 16	12							
13	N	N	N	N	2		9	Y	13							

Y = neonates present, and criterion has been met: ≥ 20 neonates produced in total by 3rd brood. N = no neonates
 2B = two broods present. 2Y = two broods and criterion met: ≥ 20 neos. by 3rd brood. X = brood mother dead ae = aborted eggs
 ✓ or P = neonates present after renewal on previous day (see time in log). A → = acceptable for acute testing only
 T# = neonates used in test, replicate number of test noted (and brood counted). acc. = if acclimated, H₂O type used w/ renewal this day.

Test organism collection:

Tray diagram used?

Project #	Symbols (✓ / P)	(Y/N)	Time period, neonates released	Collection date / time
0044654	T	Y	10-9-16/1630 → 10-9-16/1800	10.10.16/1100
0044158	T	Y	10-9-16/1800 → 10.10.16/0800	10.10.16/1145
	T			
	T			
	T			
	T			